Boll. Zool. agr. Bachic.
Ser. II, 33 (3): 11-17

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Evelyna M. Danzig: a powerful force in scale insect systematics

Abstract - The coccidologist community recognizes the very significant contributions made by Dr. Evelyna M. Danzig during her 42 year career as a research scientist with the Zoological Institute, Russian Academy of Sciences (and her career continues). She has authored more than 120 scientific papers and books on the systematics of scale insects and whiteflies and has studied the faunas of Central Asia, Caucasus, Siberia, the Far-Eastern Russia, northern Russia, Mongolia, Afghanistan, and Vietnam, to name a few. She has been a mentor for many students of scale-insect systematics, and has written articles on faunistics, life history, polymorphism, phylogeny, identification, classification, and nomenclature. She is an avid collector and has spent many summers observing scale insects in the field as well as mounted on microscope slides. Within the pit scales, soft scales, felt scales, margarodids, armoured scales, and mealybugs, she has characterized 10 new genera and 129 new species. It is a privilege to honor such a productive and knowledgeable colleague.

Key words: Russia, Palearctic, Systematist, Classification.

On the occasion of the Ninth International Symposium on Scale Insect Studies (ISSIS-IX), it is our privilege to honor Evelyna Markovna Danzig for her outstanding achievements in the field of coccidology. During each meeting of ISSIS, attending members of the Symposium choose a colleague whose contributions have added to the body of knowledge about scale insects in such a significant way that without their efforts the field would be many years behind its current state. We will briefly describe why we believe that this honor is particularly well deserved by Evelyna Danzig.

Evelyna has a passion for scale insects! She loves collecting them, examining and understanding their character systems with a compound microscope, developing hypotheses about their phylogeny, and adding new information to their classification. She is intensely interested in all aspects of their being! She has written papers on their classification, life history, faunistic relationships, intraspecific variation, polymorphism, nomenclature, identification, host preferences, and invasiveness. Her publications serve as primary sources of information on the Palearctic scale insect fauna. Many scientists who study scale insects in this region have told us that the advice, information, and

research resources provided by Evelyna have been important and often crucial to the success of their programs.

Before providing more on the contributions of Evelyna, we thought it important to give some background on the mechanisms and sources used to gather the information given below. We apologize for any omissions but believe that if omissions exist they would only add to the already outstanding record portrayed here. In a sense, it is unfortunate that some of Evelyna's closer colleagues were unable to prepare this document, because many of them have worked more closely with her over the years and have better insight on her dedication and role as a leader in Palearctic coccidology. The problem is that the language of ISSIS is English and most of Evelyna's colleagues were hesitant to give such an important presentation in a language other than their own. Preparations for this paper involved examination of all 97 scale-insect publications by Evelyna and compilation of a set of statistics that clearly demonstrate the magnitude of her accomplishments during the past 42+ years. Much of the data was gathered from the "Scales described by an author" and "References by an author" queries in ScaleNet (Ben-Dov et al., 2001), but it was important to include information on the Asterolecaniidae, Diaspididae, and Margarodidae, which are not yet included in ScaleNet. We also sent an E-mail to as many of her colleagues as possible asking for their input. We each have had the opportunity to work with Evelyna on a research project, have done field work with her in the United States and Italy, and have interacted with her at various ISSIS meetings.

Evelyna was born October 12, 1932 in Leningrad (=St. Petersburg), Russia. She graduated from the Leningrad Agricultural University in 1955. From 1955 to 1958 she did postgraduate work at the same University and ultimately received her Ph.D. in 1960. Beginning in 1959, she worked at various levels in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, advancing through the grades of Junior, Senior, and Lead Scientific Researcher. Her teacher was N. S. Borchsenius who built a wonderful collection and library that greatly facilitated Evelyna's work. After a major research project on the scale insects of the Far Eastern part of Russia and an analysis of the phylogeny of all scale insects, she earned her Sc.D. in 1980.

Our analyses indicate that as of August 14, 2001 Evelyna has published 97 papers on scale insects and about 120 papers on all subjects. Her scale papers encompass more than 1,800 printed pages. These works include descriptions of 129 new species and 10 new genera in the families Asterolecaniidae, Coccidae, Diaspididae, Eriococcidae, Margarodidae, and Pseudococcidae. During her career, she also has redescribed many previously known species or has added new information about nearly 1,000 species, and she has prepared and published about 180 identification keys. Although numbers are not always the best method to measure the quality of a scientist's productivity and impact to a field, in this case we think they give some very interesting insight into the career of the distinguished scientist that we honor at ISSIS-IX.

There are several aspects of Evelyna's descriptive papers that merit special mention. It is apparent that she is committed to helping others by conveying information that will be useful for making identifications. She goes out of her way to include

illustrations of the species that are not well known, provides a comparison with a closely similar species that might be confused with the described species, and frequently includes keys to assist in the identification process. We are afraid that many of us sometimes forget that one of the most important aspects of our research is to help others recognize species of scale insects.

The kinds of research that Evelyna has undertaken have been unusually diverse. Early in her career she was interested in host-induced forms and other kinds of intraspecific variation. She undertook a series of experiments with *Lepidosaphes ulmi* (Linnaeus) and later studied two dramatically different host forms of *Eulecanium franconicum* (Lindinger). Through time this background has given her a strong awareness of intraspecific variation that is generally broader than most systematists and has frequently been the rationale for synonymizing species seeming to be host races or geographic forms. Her early biological background also made her cognizant of the importance of detailed field observations and has been helpful in sorting out the life history of many species; this background also has provided a special ability to detect taxonomic characters that are useful in identifying scale insects in the field. She has published numerous papers on the scale insects of various parts of Russia and surrounding countries. This work started in the Leningrad area, expanded to the Karelia area, and soon included Caucasus, Central Asia, Siberia, and the Far East. Over the years she has published on material from Afghanistan, Hungary, Iran, Israel, Mongolia, Switzerland, and Vietnam. She has developed a keen interest in the faunistics of scale insects and has studied community composition and habitat preferences of various species. Evelyna has been very active in dealing with nomenclatural issues and has written several petitions to the International Commission on Zoological nomenclature, often in collaboration with her colleague I. M. Kerzhner. She has collaborated widely with scientists from many parts of the world, including France, Hungary, Italy, Kazakhstan, Russia, and the United States. Some of her most important works include the key to the insects of the European USSR (Danzig, 1964), her book on the scale insects of the Far-Eastern USSR (Danzig, 1980), a monograph on the armoured scales in the Fauna of Russia and Neighbouring Countries series (Danzig, 1993), and the jointly published catalogue of the armoured scales of the Palearctic region (Danzig & Pellizzari, 1998).

Examination of Tables 1 and 2 provides insight into the career of this productive scientist. It appears that the first decade was spent learning the groups and honing her research skills. Although the level of productivity was high, there was a tendency to work on new species and the papers were generally smaller. During this period Evelyna seemed most interested in the Coccidae, but started work on eriococcids and pseudococcids. During this time she put a lot of effort into the book chapter on the insects of the European USSR. The second decade was a descriptive phase when the discovery of new scales was combined with information on the known species and identification keys were becoming regular parts of major papers. The papers were primarily small, but several important revisions were published during this era. Her work on the soft scales was being phased out and her interest was redirected to the

Table 1 - Productivity of Evelyna Danzig between 1960 and 1999

Years	1960-69	1970-79	1980-89	1990-99	2000-01	TOTAL
Papers	18	32	20	25	2	97
Papers/year	1.8	3.2	2.0	2.5	1.0	
Pages	208	268	486	850	35	1,846
Pages/paper	11.6	8.9	24.3	34.0	17.5	
Pages/year	20.8	26.8	48.6	85.0	17.5	
Keys	50	5	81	43	2	181
New species	22	63	30	10	4	129
New sp./year	2.2	6.3	3.0	1.0	2.0	
Redescribed sp.	39	430	192	278	18	957
Redescr. sp./year	3.9	43.0	19.2	27.8	9.0	

Table 2 - Chronology of New Species Descriptions in Each Family of Scale Insect

Years	1960-69	1970-79	1980-89	1990-99	2000-01	TOTAL
Asterolecaniidae		1				1
Coccidae	15	10		1		26
Diaspididae		2	2	1	1	6
Eriococcidae	3	13	2	1		19
Margarodidae		1	2	3		6
Pseudococcidae	4	36	24	4	3	71
TOTAL	22	63	30	10	4	129

mealybugs and eriococcids. In the third decade (1980 to 1989), she published her work on the scales of the Far- Eastern USSR and was becoming excited about more synthetic issues such as scale insect phylogeny and classification. Emphasis on descriptions of new species was slowing down, but her publications were becoming larger and increasingly more useful for helping others make identifications. From 1990 to 1999, she wrote the catalog of the Palearctic Diaspididae and a monograph on the armored scales of Russia and neighbouring countries, in addition to several other important revisionary works. This really is the time of her life for synthesis of the vast amount of information that she has learned over the past forty plus years. Her publications are generally large, cover many groups, and include lots of keys, redescriptions, and other identification aids.

Emphasis to this point has been on the research accomplishments of Evelyna Danzig, but her contributions are much more vast. As the curator of one of the largest scale collections in the world, she has major responsibilities in caring for the collection and providing specimens and information to colleagues around the world. Although we have no data on the identification responsibilities of her position, she must have

made thousands of scale insect determinations during her career. But, perhaps the most important aspect of her contribution to the field, outside of her research, is her interactions with students. Some of the scientists that she has helped train are: Natasha Abdrashitova (Kyrgyzstan); B. B. Bazarov (Tadzhikistan); Ilya Gavrilov (Voronezh); Svetlana Ivanova (St. Petersburg); Galina Konstantinova (Moscow); Ferenc Kozár (Hungary); Leana Mkrtchian (Armenia); A. M. Nurmamatov (Tadzhikistan); Roman Jashenko (Kazakhstan). E-mails that were received from Natasha and Roman give the best indication of the impact that Evelyna has had on her students over the years. We have corrected their English slightly and have given only excerpts, but the importance of Evelyna's mentoring is very clear.

From Natahsha: I have known Evelyna since 1991 which was my first scientific trip to St. Petersburg. At that time I had samples of scale insects that I collected in Kyrgyzstan. I didn`t have any idea of what to do with them. Evelyna taught me everything. I`ve learned how to prepare slides and how to recognize and identify species. We developed a plan of work for my research. She frequently provided expert advice during the preparation of my dissertation on the ecology and zoogeography of scale insects in Kyrgyzstan. I am most impressed with two qualities of Evelyna: Her incredible ability to work hard; and the high level of precision of her research. When she writes an article or book or describes a species, she becomes completely obsessed with the task, losing all track of time. Her work ethic and example have caused me to acquire her enthusiasm and her obsession for learning more about scale insects. She is a very accurate person both in the technical and scientific aspects of her work and she requires her students to perform in the same manner. Also Evelyna is not just a teacher for me, but she is my good friend. I have often asked for her advice regarding important decisions. I am thankful that fate led me to this cultured and educated woman and that I can call her my teacher and my friend.

From Roman: I have known about Evelyna Danzig since I was a student at the University and began my studies on the scale insects of Central Asia. I found her many excellent publications on Palearctic scales to be very important, and even now, after 15 years, her monograph on the Scales Insects of the Russian Far East is the best example of research on the scale insects for the region. While working in the Laboratory of Entomology in Kazakhstan I heard many compliments from my colleagues about Evelyna's hardwork, comprehensive knowledge, and nice personal character. At the end of 1988 I had an opportunity to work with her for several months in the Institute of Zoology of the Russian Academy of Sciences. It was a wonderful experience, because I could discuss many topics with her on systematics, evolution, morphology, biology and ecology of insects, especially scale insects. She taught me a lot about many aspects of coccidology and her advice was very important for my research on the Margarodidae. Evelyna Markovna is a very hard-working scientist, but she always has time for discussions and for helping others. During my stay in St. Petersburg I noticed that many people from many different areas who visited her (A. Nurmamatov from Tadzhikistan, L. Mkrtchyan from Armenia, N. Abdrashitova from

Kyrgyzstan, G. Kozarzhevskaya from Moscow and many others) and she always had time for all of us. Her knowledge of history, classical literature, theatre, and the arts is very comprehensive; every time I meet with her I sincerely enjoy our conversations. She is an excellent teacher and a friend of many people, including myself.

Evelyna is a person too!! As her friend Danièle Matile-Ferrero says, she is not a person of many words. As an example, we asked Evelyna to provide a Curriculum Vita to assist us in writing this paper. The result was an E-mail that printed out to less than a half of a page for a career that spans more than 40 years. Her E-mail doesn't even cover the bare essentials let alone the bragging that is common in most CV's. She also is well liked where ever she goes. Her colleagues in the Zoological Institute regard her very highly; she has many friends world wide including Britain, France, Hungary, Italy, Kazakhstan, Poland, Switzerland, Turkmenistan, and the United States to name a few. Evelyna also pursues interests other than scales. When visiting the United States the first thing that she wanted to see outside of the scale collection was not the White House or the Smithsonian's Natural History Museum or the Washington Monument, it was the Atlantic Ocean. During a visit to Italy she insisted on swimming in the Adriatic Sea and did so when the weather was less than amenable. She partook of the concentrated waters of the Dead Sea during a field trip that was part of the ISSIS-VII experience. She apparently collects oceans and prides herself in having swum in a large number of the worlds great bodies of salt water. When visiting England the first thing that she wanted to see after working in the scale collection was not the Buckingham Palace or Kew Gardens, but the wild heath lands of the U.K. We are not sure if she collects heath habitats like she does oceans, but she is very interested in the natural areas of the world.

In conclusion, after working for more than 42 years in the Zoological Institute, her expertise on Russian and Palearctic scale insects has become one the most extensive ever amassed. Her legacy is the students that she has trained, the papers that she has written, and the monographs that we all have on our reference shelves. And she continues! In the past several year she has produced revisionary studies of *Kiritshenkella* and related genera, *Puto*, *Peliococcus*, mealybugs with oral-rim tubular ducts, and *Trionymus*. She currently is working on an important series of papers on the mealybugs of Russia and neighboring countries; expect to see more from Evelyna in the near future.

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